L 11957-66

ACC NR: AP5026598   6

ured by neutron diffraction in the temperature range 317--100K. The magnetic moment per atom was calculated from the total intensity, without the need for correcting for secondary extinction, and was found to be 0.042 ± 0.02 Bohr magnetons, in good agreement with earlier results on chromium. The presence of thermal hysteresis was verified and its temperature dependence measured. Attempts were made to analyze the causes of non-uniform distribution of magnetic intensity with respect to the directions in the single crystal. The experimental results are discussed in terms of two models of the antiferromagnetic structure of chromium involving sinusoidal modulation, the one-domain and three-domain versions. It is shown that arguments can be presented in favor of each version. Authors thank A. I. Leypunskiy and V. M. Agranovich for helpful discussions. Orig. art. has: 9 figures, 1 formula, and 2 tables.

SUB CODE: 20/   SUBM DATE: 26May65/   NR REF SOV: 003/   OTH REF: 004

Card 2/2

ACC NR: AP6033050   SOURCE CODE: UR/0126/66/022/002/0234/0238

AUTHOR: Nakonechnikov, A. I.; Pavlinov, L. V.; Bykov, V. N.

ORG: none

TITLE: Carbon diffusion into refractory metals with a bcc lattice

SOURCE: Fizika i metallov i metallovedeniye, v. 22, no. 2, 1966, 234-238

TOPIC TAGS: refractory metal, molybdenum, niobium, tungsten, tantalum, titanium, diffusion, carbon diffusion, diffusion coefficient, activation energy, frequency factor

ABSTRACT: Specimens of 99.98%-pure molybdenum, 99.14%-pure niobium, 99.51%-pure tungsten, 99.01%-pure tantalum, annealed at 1500C, and 99.62%-pure titanium, annealed at 1000C, were coated with a uniform thin layer of C-14 radioactive carbon and, after stacking into pairs with the active sides facing each other, were diffusion annealed in a vacuum of $(3-5) \cdot 10^{-5}$ mm Hg at 1100—1600C. The diffusion coefficient and activation energy were determined with an accuracy of about 12 and 5%, respectively. With increasing annealing temperature from 1200 to 1600C, the diffusion coefficient increased from $1.34 \cdot 10^{-8}$ to $4.24 \cdot 10^{-7}$ cm^2/sec for molybdenum, from $8.61 \cdot 10^{-10}$ to $5.15 \cdot 10^{-8}$ cm^2/sec

Card 1/2   UDC: 539.292:548.4

ACC NR: AP6033050

for tungsten, and from $1.05 \cdot 10^{-8}$ to $2.51 \cdot 10^{-7}$ cm^2/sec for tantalum.
For niobium and titanium, diffusion annealed in the 1100—1400C range,
the diffusion coefficient varied from $2.49 \cdot 10^{-8}$ to $4.08 \cdot 10^{-7}$ cm^2/sec
and from $1.75 \cdot 10^{-6}$ to $7.27 \cdot 10^{-6}$ cm^2/sec, respectively. In the same
temperature ranges, the calculated values of the activation energy
were 53500, 43000, 41000, 35000, and 20000 cal/g·atom for W, Ta, Mo, Nb
and Ti, respectively. Thus, the activation energy for carbon diffusion
into metals with a bcc lattice is directly proportional to the melting
temperature of the base metal, and can be expressed by the equation
$\Delta H = kT_{mel}$, where K $\approx$ 10—13. The frequency factor for the carbon dif-
fusion into the bcc metals is, to a great extent, determined by the
activation energy, and can be expressed by the equation $D_0 = A \exp(b\Delta H)$,
where $A = 3.2 \cdot 10^{-4}$ cm^2/sec and $b = 10^{-4}$ cal/g·atom. Orig. art. has:
4 figures, 2 tables, and 10 formulas.

SUB CODE: 11/ SUBM DATE: 03Dec65/ ORIG REF: 007/ OTH REF: 005

Card 2/2

KAGAN, D.F.; SHAPIRO, G.I.; BYKHOV, V.N.

Expanding the uses of plastic pipe. Sbor. trud. NIIST no.12:
92-100 '62.

(Pipe, Plastic)   (MIRA 16:3)

BYKHOV, V.N., inzh.

Behavior of the polymer layer in lined pipes manufactured by combined drawing. Vod. i san. tekh. no.5:19-22 My '63. (MIRA 16:6)

(Pipe, Plastic)

BYKOV, V.P., mashinist

My experience in operating a VL22^m electric locomotive with recuperation. Elek. i tepl. tiaga 3 no.3:38-39 Mr '59.
(MIRA 12:5)

1. Depo Barabinsk, Omskaya doroga.
(Electric locomotives)

BYKOVA, V.P., stud. (Moskva)

Macroluminescent analysis of pathological processes in the lungs; cancer of the lung and chronic suppuration from the aspect of histological control. Arkh.pat. no.10:21-24 '61. (MIRA 14:10)

1. Iz kafedry patologicheskoy anatomii (zav. - deystvitel'nyy chlen AMN SSSR prof. I.V. Davydovskiy) II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova.
(LUNGS—DISEASES) (DIAGNOSIS, FLUOROSCOPIC)

BYKOV, V.P.

Modeling of the oscillations of open resonators. Elektron.
bolsh. moshch. no.3:148-153 '64.   (MIRA 17:9)

KHAYKIN, M.S.; BYKOV, V.P.

An attempt to detect the Raman effect in a superconductor. Zhur. eksp.
i teor. fiz. 30 no.1:191-192 Ja '56.   (MLRA 9:7)

1.Institut fizicheskikh problem Akademii nauk SSSR.
(Raman effect) (Electrons--Spectra)

BYKOV V. P.

AUTHOR: None given   48-10-2/20

TITLE: Materials of the 2nd All-Union Conference on X-ray Spectroscopy;
           Moscow, January 31 to February 4, 1957 (Materialy II Vsesoyuznogo
           soveshchaniya po rentgenovskoy spektroskopii; Moskva, 31 yanvarya -
           4 fevralya 1957 g.)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1957, Vol 21,
            Nr 10, pp 1341 - 1342 (USSR)

ABSTRACT: The Second All-Union Conference on X-ray Spectroscopy was held from
           January 31 to February 4, 1957. Thirty-three reports were given, 18
           of which appear in this issue. The remaining are: Introductory
           Remarks by Ya. S. Umanskiy; Calculating the Structure of X-ray Emission
           Spectra of Self-Regulating Alloys by A. N. Orlov and A. V. Sokolov (UFAN SSSR);
           Contemporary Methods of X-ray Spectra Registration by M. A. Blokhin
           and A. I. Froyman (RGU and Khimfak MGU); High Stability lower Sources
           for X-ray Spectra Installations by A. I. Froyman; Prospective Ap-
           plications of Electrostatic Photography (xerography) in X-ray Spectral
           and X-ray Structural Analysis by A. I. Froyman; Investigation of the
           Fine Structure of X-ray K-Spectra of Absorption and Emission of Some
           Elements of the Iron Group by I. B. Borovskiy, V. P. Bykov and

Card 1/2

48-10-2/20

Materials of the 2nd All-Union Conference on X-ray Spect.oscopy; Moscow, January 31, to February 4, 1957

A. I. Kozlenkov (Fizfak MGU); Interrelationship of Some X-ray Spectral and Magnetic Characteristics of Iron-Base Alloys by S. A. Nemnonov and K. M. Kolabova (UFAN SSSR); Investigation of Binding Forces in Solid Iron-Molybdenum Solutions According to the Fine Structures of X-ray Absorption Spectra by V. A. Trapeznikov and S. A. Nemnonov (UFAN SSSR); On the Theory of Solid Solutions Based on Transitional Metals by I. B. Borovskiy and K. P. Gurov (IMET AN SSSR); Relationship of Temperature and Concentration of Fine Structure of X-ray Absorption Spectra of Solids and an Investigation of Binding Forces by V. A. Trapeznikov; Investigation of X-ray L-Spectra of Some Rare-earth Element Compounds by N. V. Troneva, I. D. Marchukova and I. B. Borovskiy (Fizfak MGU); Investigation of X-ray Emission K Lines of β-Group Titanium in Carbides and Some Other Compounds by E. Ye. Vaynshteyn and Yu. N. Vasil'yev (GEOKhI AN SSSR); X-ray Spectral Investigation of Molybdenum L Spectra in Some Alloys and Compounds by V. A. Batyrev, I. B. Borovskiy and S. A. Ditsman (IMET AN SSSR); Some Satelites of Spectral Lines by T. I. Kakushadze (Georgian Teacher's Institute); X-ray Spectral Investigation of Sulphur-containing Samples by M. A. Blokhin, P. S. Nesterenko and A. T. Shuvayev (RGU).

AVAILABLE: Library of Congress
Card 2/2

05473
SOV/120-59-3-44/46

AUTHORS: Bykov, V. P., and Kostryukov, V. N.

TITLE: A Device for Keeping the Level of Liquid Nitrogen in a
            Dewar Constant (Pribor dlya avtomaticheskogo
            podderzhaniya postoyannogo urovnya zhidkogo azota v
            dyuare)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 3
            p 154 (USSR)

ABSTRACT: The device (Fig 1) consists of a metal siphon A, with an
            automatic siphon valve Б and a sealing head B, which is
            fixed to the liquid-nitrogen container. The valve
            allows the container to communicate with the atmosphere;
            the tube and siphon contain oxygen, and the tube serves
            to indicate the nitrogen level in the dewar. The oxygen
            evaporates and closes the valve if the nitrogen falls
            below the tip of the tube. The pressure in the container
            rises and forces the liquid over into the dewar until the
            tube is again cooled, when the valve quickly opens
            again. The rubber ring E ensures that the siphon is
            properly sealed to the container. The valve on the left
            is a safety valve. (Complete translation of all relevant
            matter). There is 1 figure.

Card 1/2

05473

SOV/120-59-3-44/46

A Device for Keeping the Level of Liquid Nitrogen in a Dewar
Constant

ASSOCIATION: Institut fizicheskikh problem AN SSSR
        (Institute of Physical Problems, Academy of Sciences
        of the USSR)

SUBMITTED: February 20, 1958

Card 2/2

AUTHOR: Bykov, V.P.   SOV/109-4-1-26/30

TITLE: Measurement of the Energy of a Mass Radiator at the Wave-
            length of 3 cm (Letter to the Editor) Izmereniye energii
            massovogo izluchatelya na volne 3 sm) (Pis'ma b redaktsiyu)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 1,
            p 145 (USSR)

ABSTRACT: The author investigated the possibility of the generation
            of microwave radiation by means of a spark discharge device.
            The system is shown diagrammatically in the figure (see
            p 145). The device consisted of 72 steel balls having a
            diameter of 3.18 mm; these were arranged into six parallel
            chains, spaced at a distance of 12 mm from each other. The
            distance between the balls in a chain was 3.3 mm. The balls
            were fixed in their positions by means of a quartz grid
            and each of the chains was connected to a pulse generator
            by means of a 1 MΩ resistance; the opposite terminals of
            the chains were grounded. The pulses applied to the device
            had an amplitude of 15 kV, a duration of 5 μsec and a
            repetition rate of 1 000 pps. The investigation showed that
            the device produced waves having a length of about 3.2 cm.
Card1/2   It was found, however, that the intensity of the radiated

SOV/109-4-1-26/30

Measurement of the Energy of a Mass Radiator at the Wavelength of 3 cm (Letter to the Editor)

energy was practically independent of the intensity of the spark discharges between the balls. If the device was placed in carbon monoxide, it was found that the radiated power was about 5.5 times greater than that in air: in nitrogen the radiation was about 4 times less than that in air. It was estimated that in carbon monoxide, the radiated power was about 5×10^{-7} W. The author expresses his gratitude to Professor A.I. Shal'nikov for directing this work and to Academician P.L. Kapitsa for his constant interest in this work. There are 1 figure and 2 Soviet references, 1 of which is in German.

ASSOCIATION: Institut fizicheskikh problem AN SSSR (Institute of Physical Problems of the Ac.Sc.USSR)

SUBMITTED: March 6, 1958

Card 2/2

84359

S/056/60/0??/004/017/048
B004/B070

26.2340

AUTHORS: Kapitsa, S. P., Bykov, V. P., Melekhin, V. N.

TITLE: A High-current Microtron /9

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
              Vol. 39, No. 4(10), pp. 997-1000

TEXT: In the present work, the authors give data so far available on a
new 5 - 15 Mev electron accelerator. A microtron with a pole piece
diameter of 700 mm and pole separation of 110 mm was constructed. The
source of high-frequency oscillations is a pulsed magnetron in the 10-cm
range. The authors discuss the different types of resonators used in
their experiments. Fig. 1 schematically shows the acceleration of
electrons emitted by a cathode of lanthanum boride heated to 1600°C. For
a field of 350 kv/cm in the resonator, the emission current density
reached the value 200 a/cm^2. By means of another arrangement of the
cathode in the resonator (Fig. 2), a current of 5 ma with an energy of
13 Mev and a magnetic field of 1950 oersteds could be obtained. The

Card 1/3

84399

A High-current Microtron

S/056/60/039/004/017/048
B004/B070

efficiency was about 10%, and the efficiency of electron capture about
5%. The authors further discuss the motion of electrons in a resonator
with a rectangular cross section. The new microtron can compete with
linear accelerators and betatrons in the region of 50 – 100 Mev. Since
the electron beam has a narrow spread of energy and momentum, the
microtron can serve as an injector for large accelerators. A detailed
description of the microtron and calculations will be provided sho___y.
A high-energy accelerator is being constructed. The authors mention
papers of V. I. Veksler (Ref. 1), and Ye. M. Moroz (Ref. 6). They thank
Academician P. L. Kapitsa for his interest in the work, L. A. Vaynshteyn
for discussions, G. P. Prudkovskiy for calculations on his trajectograph,
I. G. Krutikova for calculations on a "Strela" computer, and S. V.
Melekhin and L. Zykin for help in the work. There are 2 figures and 6
references: 3 Soviet, 2 British, and 1 Canadian.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR
              (Institute of Physical Problems of the Academy of Sciences,
              USSR)

Card 2/3

84399

A High-current Microtron

S/056/60/03?/004/017/048
B004/B07C

SUBMITTED: June 15, 1960.

Card 3/3

BYKOV, V.P.; SOROKIN, I.V.

X-ray spectroscopic flurescence analysis of raw ores. Zav.lab. 27
no.11:1371-1374 '61.   (MIRA 14:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya.
                  (Ores—Spectra)

24.6760

25188
S/056/61/040/006/009/031
B102/B214

AUTHOR: Bykov, V. P.

TITLE: Investigation of the electron packets in a microtron

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40,
            no. 6, 1961, 1658 - 1666

TEXT: The author has developed a method for measuring the charge density
in the electron packets formed by the acceleration of electrons in a
microtron. The microtron is a powerful source of electron packets, and
has been studied many times before, inter alia, theoretically by A. A.
Kolomenskiy (ZhTF, 30, 1347, 1960) and Henderson. The investigations
described in the present paper are based on the work of Kolomenskiy.
The electron packets were studied by oscillographing the beam of a micro-
tron of the type ИФП (IFP) which gives a pulsed current of 5 ma at an
energy of 7.3 Mev in its twelveth orbit. The method of measurement has
been described before by L. E. Tsopp (Radiotekhn. i elektron., 4, 1936,
1959). The size of a packet is determined from the fact that beginning
and end of the packet pass a deflecting system; the packet size is

Card 1/6

25188

Investigation of the electron packets..   S/056/61/040/006/009/031
B102/B214

determined from the bending and the scanning rate. The deflecting sys-
tem is a toroidal resonator, whose electric field is at right angles to
the velocity. It is set at the last orbit (12th) (cf. Fig. 1). The
deflection of the electrons is vertical, i. e. parallel to the magnetic
field of the microtron. On the same orbit 360 mm behind the resonator
there is a luminescent screen on which the electron packet forms a
glowing streak which can be observed on television. Its size h is rela-
ted to the length 1 of the packet by the relation $h/u = 1/v$, where u is
the scanning rate and v the velocity of the electron, $v \approx c$, so that one
may also write $1 \approx hc/u$ can be determined from $u = \omega A$ if the amplitude
of the deviation is known. In the microtron considered here $\omega d/u = d/A$

$\approx 0.8^\circ = \Delta \varphi$, d is the width of the streak on the screen through which
only those electrons pass which have passed the scanning resonator in the
neighborhood of the scanning phase $2n\pi$. (A sinusoidal voltage is applied
to the acceleration resonator). $\omega t = 2n\pi - \varphi_1$, which is denoted as $\Delta \varphi$ ($\Delta \varphi$

$= \omega \tau$, where τ is the time of passage of the beam through the slit). The
mean value of the current on the collector is given by

Card 2/6

Investigation of the electron packets.

25188
S/056/61/040/006/009/031
B102/B214

$J_{coll} = \dfrac{d\psi\,\tau_0\,o}{2\pi A}\ J\!\left(\omega\dfrac{s}{v} - \varphi_1\right)$, J is the current through the resonator, v_0 the frequency at which the current pulse is repeated, τ_0 is the duration of a current pulse, and s is the path of the electrons between the acceleration resonator and the scanning resonator. J, i. e. the phase distribution of the electrons can be found by varying s. The slit in the luminescent screen was horizontal and 0.4 mm wide. 110 mm behind it was the beam catcher, a thick - walled Faraday cage of lead which was enclosed in a highly sensitive (10^{-12}a) current amplifier. Its signals hit an automatic potentiometer (type EPP-09) whose course was synchronized with the displacement of the scanning resonator, so that the electron distribution in the packet was automatically recorded on the strip. The scanning amplitude is given by $A = (e/E)\,\sqrt{8QW/fdr^2}$. where E is the total electron energy. Q the quality factor of the scanning resonator, W the power absorbed by it, f the frequency, and d and r its dimensions. The parameters of the apparatus were the following: Q = 3000, L = 36 cm

Card 3/6

Investigation of the electron packets...

25188
S/056/61/040/006/009/031
B102/B214

(distance of the screen from the resonator), $f = 3 \cdot 10^9$ cps, $d = 0.8$ cm, $r = 1.75$ cm, and $E = 7.3$ Mev. At a power of 40 kw the scanning amplitude is 2.8 cm. During the experiments the power absorbed was 50 - 60 kw and the amplitude 30 - 40 mm. There are many causes for these large errors. One of the principal causes is that the scanning resonator is not moved exactly along the orbit but performs a complicated motion diverging from the path of the electrons. Moreover, a part of the beam was moved relatively to the resonator axis. Fig. 4 shows the actual electron distribution along the packet (n_e is the electron density). The energy spread of the electrons amounting to 0.5 % is also a source of error. The length of the packet (the distance between two subsequent electron density peaks) was found to be $(0.05 - 0.07)$ ` cr 5 - 7 mm with an error of measurement of 20 - 25 % (λ is the wavelength of the accelerating field). Fig. 7 shows a typical phase diagram; ϵ is the difference between the energies and their equilibrium values. The authors thank P. L. Kapitsa for her interest; S. P. Kapitsa   for his guidance; and L. A. Vaynshteyn and V. N. Melekhin for discussions. A. A. Kolomenskiy and P. Ye. Krasnushkin are mentioned. There are 7 figures, and 8 references: 5 Soviet-bloc and 3 non-Soviet--bloc.

Card 4/6

25188

Investigation of the electron packets..

S/056/61/040/006/009/031
B102/B214

The most important references to English-language publications read as follows: C. Henderson et. al. Proc. Phys. Soc., B 66, 654, 1953 and B 66, 41, 1953.

ASSOCIATION: Fizicheskiy laboratoriya Akádemii nauk SSSR (Physical Laboratory of the Academy of Sciences, USSR).

SUBMITTED: January 25, 1961

Card 5/6

27186

S/056/61/041/002/007/028
B102/B205

26.2340

AUTHORS: Kapitsa, S. P., Bykov, V. P., Melekhin, V. N.

TITLE: An efficient high current microtron

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,
              no. 2 (8), 1961, 368 - 384

TEXT: Following a series of previous publications (Ref.10: ZhETF, 39, 997,
1960) the authors describe a microtron that has none of the deficiencies
connected with electron injection, which are shown by conventional acceler-
ators of this kind. Owing to the type of resonator developed by the
authors (cf. Ref. 10), the electron injection from the hot cathode is
directly under the action of the h-f resonator field. The new type which
uses E_{010} oscillations, makes it possible to achieve pulsed currents of
20 ma at an energy of 7 Mev, and of 5 ma at 13 Mev. The electromagnet and
the vacuum chamber of the accelerator are schematically represented in
Fig. 1. Fields of up to 1500 oe in an area of 55 cm diameter were homo-
geneous up to some 10%. The magnet had a weight of 1.5 t, and generated

Card 1/6

27186

An efficient high current...

S/056/61/041/002/007/028
B102/B205

fields of up to 2000 oe at a current density of 3 a/mm^2 and an excitation power of 4 kw. The magnet was fed by a three-phase selenium rectifier which was stabilized up to 0.1%. The pressure in the chamber amounted to 10^{-5} mm Hg. The h-f field was generated by a standard magnetron with a modulator. The pulse duration was 3 μsec and the frequency 427 cps. De-tailed information on the motion of electrons in the cylindrical resonator with E_{010} waves being generated in it was obtained by numerical integration of the equations of motion of electrons with the electronic computer "Strela". Fig. 2 illustrates the motion of electrons in the resonator. A cross-sectional view of the resonator is given in Fig. 3. Hot cathodes of LaB_6 proved most convenient. The characteristic parameters of the acceler-ator in its two modes of operation (20 and 5 ma) are listed in Tables 1 and 2. The efficient electron accelerator described here can compete well with lineacs in the low-energy range. Its advantage lies in the constant energy of the beam, its "packing", its high reliability, and in its simple design. The authors thank P. L. Kapitsa, A. A. Kolosov, and S. V. Melekhin for as-

Card 2/6

27185

An efficient high current...

S/056/61/041/002/007/028
B102/B205

sistance, S. I. Filimonov for his interest in the work, G. P. Prudkovskiy
and L. A. Vaynshteyn for a discussion, and Engineer L. Zykin for assistance
in the construction of the microtron. In an appendix, a detailed report on
the calculation of the motion of electrons in the microtron is given by
S. P. Kapitsa, V. N. Melekhin, I. G. Krutikova, and G. P. Prudkovskiy for
the case of a cylindrical and a rectangular resonator. The authors of the
appendix thank P. L. Kapitsa and Ye. S. Kuznetsov for their interest in the
work, M. M. Antimonik for programing the computations, and V. P. Bykov and
L. A. Vaynshteyn for discussions. V. I. Veksler is mentioned. There are
13 figures, three tables, and 21 references: 9 Soviet and 12 non-Soviet.
The two most important references to English-language publications read as
follows: C. Henderson et al. Proc. Phys. Soc. B66, 41, 1953; J. S. Bell.
Proc. Phys. Soc. B66, 802, 1953.

ASSOCIATION: Fizicheskaya laboratoriya Institut fizicheskikh problem
              Akademii nauk SSSR (Physical Laboratory of the Institute of
              Physical Problems of the Academy of Sciences USSR)

SUBMITTED: March 28, 1961

Card 3/6

BYKOV, V.P.

Intramolecular energy transfer and lasers. Zhur.eksp.i teor.fiz.
43 no.6:2313-2315 D '62.   (MIRA 16:1)

1. Institut fizicheskikh problem AN SSSR.
              (Masers).   (Molecules)

BYKOV, V.P., inzhener-tekhnolog

Effect of the post-mortem state of fish on its quality after freezing and defrosting. Trudy VNIIRO 45:5-15 '62.

(MIRA 16:5)

(Fish, Frozen)

AID Nr. 955-1   30 April

EFFECT OF MAGNETIC FIELD INHOMOGENEITIES ON THE MOTION OF PARTICLES IN A MICROTRON (USSR)

A theoretical study shows that a small inhomogeneity of the magnetic field of a microtron leads to drift of the orbital centers of electrons and to a shift in the equilibrium phase. It is assumed that the length of the acceleration path is so small as to be negligible, as is the case with the microtron of the Institute of Physical Problems Academy of Sciences USSR, in which constant velocity c is attained after 2 or 3 orbits. Formulas are derived which describe the drift of orbital centers and equilibrium phase shift for an arbitrary type of inhomogeneity, and the effect of a specific homogeneity described by a second-degree polynomial proposed by S. P. Kapitsa is analyzed. It is shown that the drift of centers increases as the square of the number of orbits, while equilibrium phase shift remains constant if the specific type and magnitude of the inhomogeneity does not change. The results can be used to set up criteria for permissible inhomogeneities in microtrons.

[BB]

Card 1/1

L 10113-63   EWT(1)/EWT(m)/BDS/ES(w)-2--AFFTC/ASD/SSD--Fab-4--IJP(C)

ACCESSION NR: AP3000028   S/0056/63/044/005/1425/1428

AUTHOR: Bykov, V. P.   64

TITLE: Electron bunches in the microtron 19   60

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 44, no. 5, 1963, 1425-1428

TOPIC TAGS: heavy-current microtron, electron bunches in a microtron

TEXT: In connection with the construction of a heavy-current microtron, whose
ultimate parameters depend on coherent radiation and the space charge of
electron bunches, the distribution of electrons in the bunches has been studied
experimentally. The investigation was made in the 11th and 12th orbits, where
the electrons had energies of 6.7 and 7.3 Mev, respectively. The wavelength
of the accelerating field was approximately 11 cm. Beam current varied from
2.5 to 6 mamp. Results obtained from five different experiments showed that
the electrons are distributed over a large region, up to 25 mm in length and
6-7 mm in width; however, the effective size of the bunch (a region containing

Card 1/2

L 10113-63

ACCESSION NR: AP3000028

4

the main portion of electrons) was $8.4 \times 1.5 \times 2.5$ mm in the 11th orbit and $5.5 \times 2.0 \times 3.5$ mm in the 12th. Bunch size and shape determined by an electronic computer were in good agreement with the experimental results. It was found that bunch length changed from the 11th to the 12th orbit owing to phase fluctuations, the variation being equal to the phase fluctuation period. The maximum current obtained in the microtron exceeded 100 mamp/pulse. Electron density in a bunch was approximately 5×10 sup 9/cm sup 3. Neither the effect of coherent radiation nor that of the space charge was detected in the experiments; however, this can be explained by the fact that the operational current was much smaller than the maximum that can be reached (1-2 amp). The author is thankful to Academician P. L. Kapitsa for the careful attention to the work and to S. P. Kapitsa, under whose direction the work was completed, and also to L. A. Vaynshteyn for many useful discussions. Orig. art. has: 1 figure.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Physical Problems Academy of Sciences SSSR)

SUBMITTED: 25Oct62   DATE ACQ: 12Jun63   ENCL: 00
SUB CODE: 00   NO REF SOV: 007   OTHER: 000

Card 2/2

BYKOV, V.P.; SOROKIN, I.V.

     X-ray spectral analysis of raw minerals. Zav. lab. 29 no.9:
1074-1076 '63.   (MIRA 17:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo
syr'ya.

BYKOV, Viktor Pavlovich; SERPOKRYL, S.M., red.

[In the cold depths; notes of an underwater tourist and
hunter] V kholodnykh glubinakh; zametki podvodnogo turista
i okhotnika. Leningrad, Lenizdat, 1964. 262 p.
                                    (MIRA 17:4)

I. 11441-65   ESD(gs)/ESD(t)

ACCESSION NR: AT4047277   S/3055/64/000/003/0148/0153

AUTHOR: By*kov, V.P.

                                                                    (p)

TITLE: Modeling of oscillations in open resonators

SOURCE: AN SSSR. Fizicheskaya laboratoriya. Elektronika bol'shikh moshchnostey,
no. 3, 1964, 148-153

TOPIC TAGS: resonator, oscillator theory, oscillation modeling

ABSTRACT: The paper describes an arrangement for modeling two-dimensional
oscillations in open resonators with the aid of waves set up on a mercury surface. The
arrangement consists of a tank made of plexiglass, filled with mercury, and an open
resonator whose parts, made of steel and cemented to the lid, are immersed to approx-
imately half their length in mercury. These part act as mirrors which reflect the
waves on the mercury surface. Waves are set up by a section of steel piano wire
touching the mercury surface close to one of the resonator mirrors. The ends of the
wire are free to move, but its central portion is secured to the armature of a polarized
relay which is actuated by a low-frequency oscillator (5-50) cps). The amplitude of the
oscillations produced on the mercury surface is maximal along the axis of symmetry of
the resonator and decreases monotonically toward the resonator edges. The standing
Card 1/2

L 11441-65
ACCESSION NR: AT4047277   2

waves on the mecury surface were observed optically. For this purpose, the reflection
of a beam of light from a 30-watt incandesent lamp, located over the mercury sur-
face, is projected on a white screen where a wave pattern is produced. Photographs
of this pattern for a few types of open resonators (plane, cylindrical, confocal, and
a type made of mirrors having one or two angles) are shown and briefly discussed.
The described method of modeling the oscillations in open resonators is simple and
reliable. It makes it possible to study such oscillations from the qualitative viewpoint
and demonstrates their fundamental properties well. "The author thanks P. L. Kapitsa
for suggesting the problem and L. A. Vaynshteyn for valuable advice." Orig. art. has:
5 figures.

ASSOCIATION: none

SUBMITTED: 00   ENCL: 00   SUB CODE: EC

NO REF SOV: 005   OTHER: 002

Card 2/2

L 13799-65   EWG(j)/EWA(k)/FBD/EWP(1)/EEC(k)-2/EEC(t)/T/EEC(b)-2/EWP(k)/EWA(m)-2/
EWA(h)   Pn-4/Po-4/Pf-4/Peb/Pi-4/'1-4   IJP(c)/AFMD(f)/AFWL/AFETR/ASD(d)/ASD(a)-5/
SSD/RAEM(a)/APGC(b)/ESD(gs)/ESD(t   WG/JHB   S/0056/64/047/002/0508/0517
ACCESSION NR: AP4043624

AUTHOR: By*kov, V. P.; Vaynshteyn, L. A.

TITLE: Geometrical optics of open resonators

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 8, 1964, 508-517

TOPIC TAGS: resonator, optical maser, cavity resonator, quantum
generator, laser mode excitation

ABSTRACT: In order to trace the connection between geometrical
optics and the theory of open resonators, the authors consider two-
dimensional problems, specifically multiple reflections from ellip-
tical mirrors, and then generalize the results to include mirrors
and caustics of arbitrary shape.   It is demonstrated in particular
that oscillation modes in open resonators bounded by caustics can
be calculated with the aid of geometrical optics.   Quantum conditions
which must be satisfied by the caustics and the rays are derived, and

Card   1/3

L 13799-65
ACCESSION NR: AP4043624

the geometrical interpretation of these conditions is given. Since
the geometrical optics approach cannot account for diffraction
losses, the method is confined to systems bounded by caustics, in
which the diffraction losses are lower than t h o s e   due to re-
flections from the mirrors. It is shown that the only caustics
that are realizable are those satisfying the quantum conditions, and
a graphic method is presented for determining the mirror shape from
the specified caustic. Such a method can be useful in the design
of quantum generators or kinematic mechanisms for the production
and polishing of mirrors. "The authors thank Ye. L. Kosarev for
useful discussions, particularly for a discussion of the geometrical
constructions." Orig. art has: 5 figures and 29 formulas.

ASSOCIATION: Institut fizicheskikh problem AN SSSR (Institute of
Physics Problems, AN SSSR)

SUBMITTED: 10Dec63   ENCL: 00

Card 2/3

L 13799-65

ACCESSION NR: AP4043624

SUB CODE: OP, EC   NO REF SOV: 006   OTHER: 000

Card 3/3

KOZHIN, N.I., prof., glav. red.; ABAKUMOV, V.A., zam. glav.
        red.; BLINOVA, Ye.N., red.; BYKOV, V.P., red.;
        MAKSIMOV, S.I., red.; ORALOVSKIY, S.G., red.;
        POLULYAK, S.I., red.; VELICHKO, Ye.M., red.

        [Papers of young scholars] Trudy molodykh uchenykh.
        Moskva, Pishchevaia promyshlennost', 1964. 261 p.
                                                (MIRA 18:1)
        1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut
        morskogo rybnogo khozyaystva i okeanografii. Vsesoyuznyy
        nauchno-issledovatel'skiy institut morskogo rybnogo kho-
        zyaystva i okeanografii, Moskva (for Abakumov, Blinova,
        Bykov).

L 55071-65   EWT(I)/T/EEC(b)-2   Pq-4/Pi-4   IJP(c)   GS
ACCESSION NR: AT5013928   UR/0000/64/000/000/0240/0241   30
                                                                        3/11

AUTHOR: Bykov, V.P.

TITLE: Geometric optics of open resonators

SOURCE: Vsesoyuznyy simpozium po difraktsii voln, 3rd, Tbilisi, 1964, Referaty
dokladov. Moscow, 1964, 240-241

TOPIC TAGS: geometric resonator optics, open resonator optics, open spherical
mirror resonator, open barrellike resonator, Brewster window resonator

ABSTRACT: According to this informative note, the paper presented to the symposium
developed the geometric method for the study of open resonators. It supplied the
eigenoscillation frequencies and the position of the corresponding caustic curves.
The paper began with a detailed study of ray propagation within a reflecting three-
axial ellipsoid (caustic surfaces, oscillation types, quantum conditions). Since
the magnitude of the electromagnetic field decreases exponentially beyond the caus-
tic surface, one can remove the reflecting ellipsoidal surface quite close to the
caustic and obtain an open resonator. The transition to the open resonator case
has a meaning because all the oscillations, except the chosen ones, become extinct.

Card 1/2

L-55071-65

ACCESSION NR: AT5013928

This circumstance is of great importance since the oscillation density, within the ellipsoid, of waves with wavelengths much smaller than the dimensions of the resonator is extremely high. The study covered: 1) oscillations between two spherical mirrors; 2) oscillations between two spherical mirrors in the presence (between the mirrors) of two inclined plane-parallel plates; and 3) oscillations in barrel-shaped resonators. Simple formulas giving the oscillation frequency and the position of the caustic are given for the first and third case. The second case is of interest because small perturbations introduced by the plates cause qualitative changes in the type of oscillation. The note claims that the newly developed geometric method should be quite simple and descriptive. Orig. art. has: 1 formula.

ASSOCIATION: none

SUBMITTED: 09Sep64   ENCL: 00   SUB CODE: OP

NO REF SOV: 000   OTHER: 000

Card 2/2

L 45455-65   EWA(k)/EWT(1)/EEC(t)   IJP(c)   LHB
ACCESSION NR: AP5007054   S/0120/65/000/001/0185/0188

AUTHOR: Bykov, V. P.; Sorokin, I. V.; Avdonin, A. S.; Zaytsev, V. S.

TITLE: X-ray automatic spectrometer for analytical purposes

SOURCE: Pribory i tekhnika eksperimenta, no. 1, 1965, 185-188

TOPIC TAGS: spectrometer, x ray spectrometer, automatic spectrometer

ABSTRACT: The spectrometer permits assaying a number of specimens for a specified element automatically. It is intended for quantitative analysis of two groups of elements having numbers from 29 (Cu) to 42 (Mo) and from 71 (Lu) to 92 (U). The spectrometer comprises three parts: the spectrometer proper, a h-v supply unit, and a radiometric unit. These design features are claimed to be original: a mechanism for automatically changing radiators; an electronic control unit; and a two-slit device in front of the counter which permits using the conventional technique of x-ray spectral analysis. A BKhV-2 x-ray tube serves as a

Card 1/2

L 45455-65

ACCESSION NR: AP5007054

source of primary radiation; eight movable secondary radiators are used. One of the two slits is adjusted to the analytical line of the sought-for element, and the second slit, to the line of the internal-standard element or it may serve for background-noise measurements. A vibrating shutter opens and closes each slit at a frequency of 100 times per min. The sensitivity of quantitative analysis is claimed to be 0.002—0.05%. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: VNII Mineral'nogo syr'ya (All-Union Scientific Research Institute of Crude Minerals)

SUBMITTED: 17Jan64   ENCL: 00   SUB CODE: OP

NO REF SOV: 000   OTHER: 000

Card 2/2

BYKOV, V.P., inzh.-tekhnolog

[Modern concepts of the changes in meat and fish charac-
teristics during freezing; a review of the literature]
Sovremennye predstavleniia ob izmenenii svoistv miasa,
ryby pri kholodil'noi obrabotke; obzor literatury. Mo-
skva, Vses. nauchno-issl. in-t morskogo rybnogo khoz. i
okeanografii, 1964. 55 p.   (MIRA 18:5)

L 1073-66   EWT(1)/T/EWA(h)   IJP(c)

ACCESSION NR: AP5013439   UR/0020/65/162/001/0046/0049

AUTHOR: Bykov, V. P.

TITLE: Radiation fluxes and natural oscillations in open resonators

SOURCE: AN SSSR. Doklady, v. 162, no. 1, 1965, 46-49

TOPIC TAGS: resonator, geometric optics

ABSTRACT: Geometric optics is a powerful tool for theoretical analysis of all types of optical systems provided the wavelength is much shorter than all dimensions of the system. The problem now arises of extending the methods of geometric optics to open resonators in the short wave range. This is hindered by the fact that concepts such as wave eigenfunction, natural frequency, etc. are foreign to geometric optics. If geometric optics is supplemented somewhat so that these concepts are included, an effective tool will be produced for solving many problems in electrodynamics. The author attempts to create an analytical tool of this type. The proposed method of analysis may be applied to problems of oscillations between spherical mirrors, especially in the case where there are plane-parallel plates between the mirrors inclined at Brewster's angle. The method may also be used for studying a resonator

Card 1/2

L 1073-66

ACCESSION NR: AP5013439   3

with spherical mirrors of different curvature. "The author is grateful to L. A. Vaynshteyn for many discussions." Orig. art. has: 4 figures, 4 equations.

ASSOCIATION: none

SUBMITTED: 12Nov64   ENCL: 00   SUB CODE: OP

NO REF SOV: 004   OTHER: 002

Card 2/2

BYKOV, V.P.

Geometrical optics of three-dimensional vibrations in cavity resonators. Elektron. bol'sh. moshch. no.4:66-92 '65.

(MIRA 18:10)

L 21740-66   FBD/EWT(1)/EWT(m)/EEC(k)-2/T/EWP(t)/EWP(k)/EWA(h)   IJP(c)   WG/JD/JG

ACC NR: AP6004932   SOURCE CODE: UR/0056/66/050/001/0140/0143

AUTHOR: Bykov V. P.

ORG: none

TITLE: Optical resonator for a quantum generator with liquid active medium

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 1, 1966, 140-143

TOPIC TAGS: liquid laser, laser material, rare earth element, laser, resonator

ABSTRACT: The author considers theoretically some of the principal problems involved in the construction of lasers in which the active medium is in the form of a solution of complex compounds of rare-earth elements, which have intense absorption in the ultraviolet region where the pumping takes place. The effect of the attenuation of the pump radiation in the medium, the heating and possible evaporation of the surface layers of the liquid, and the thickness of the cuvette for the liquid are analyzed. The following conclusions are drawn: (a) the resonator should consist of a thin layer of active liquid bounded by dielectric plates that are transparent in the pump region, (b) the presence of an interface between the liquid and the dielectric of the cuvette makes it possible to retain the light effectively in the working volume, (c) the liquid can be maintained more homogeneous in thin layers than in broad cuvettes, (d) the use of thin layers permits the pump power to be spread over a wide spectral interval. A resonator design based on these considerations is proposed (Fig. 1). The use

Card 1/2   2

L 21740-66
ACC NR: AP6004932

Fig. 1. Resonator for laser with
liquid medium. 1 -- Mirrors, 2 --
liquid, 3 -- dielectrics.

of liquid-medium lasers is attractive because the pump energy density can be in-
creased by hundreds of times over that in ruby, and because a circulating active
medium can be readily cooled. Author thanks F. I. Grigor'yev, V. F. Kosikhin, and
V. M. Krivtsun for a discussion of the work. Orig. art. has: 2 figures and 5 for-
mulas.

[02]

SUB CODE: 20/   SUBM DATE: 05Jul65/   ORIG REF: 002/   OTH REF: 002

Card 2/2

L 23384-66   EWT(1)

ACC NR: AT5027154   SOURCE CODE: UR/3055/65/000/004/0066/0092

AUTHOR: Bykov, V. P.

ORG: none

TITLE: Geometrical optics of three-dimensional oscillations in open resonators

SOURCE: AN SSSR. Fizicheskaya laboratoriya. Elektronika bol'shikh moshchnostey, no. 4, 1965, 66-92

TOPIC TAGS: open resonator, geometric optics

ABSTRACT: The geometrical approach to analyzing a 2-dimensional field (V. P. Bykov et al., ZhETF, v. 47, no. 8, 508, 1964) is extended over the 3-dimensional case in the present article. This approach permits determining natural frequencies and caustic-surface positions. Propagation of beams inside a reflecting 3-axis ellipsoid is examined; second-order surfaces confocal with the ellipsoid are the caustic surfaces of the beam families inside the ellipsoid. Four distinct modes are recognized in the ellipsoid. Two of them, possible in barrel-shaped resonators, are in fact whispering-gallery-type oscillations. "Quantum" conditions determining

Card 1/2

L 23384-66

ACC NR: AT5027154

natural frequencies and caustics positions are formulated for all 4 modes. The case of two spherical mirrors with and without two slanted parallel plates between them is considered, as are the whispering-gallery oscillations. It is shown how 2-dimensional formulas can be deduced from the 3-dimensional developed in this article. The geometrical and wave approaches to open-resonator problems are mutually supplementary. "In conclusion, the author wishes to thank L. A. Vaynshteyn for numerous stimulating discussions." Orig. art. has: 7 figures and 65 formulas.

SUB CODE: 09 / SUBM DATE: 06Jun64 / ORIG REF: 006 / OTH REF: 002

Card 2/2

L 27666-66   EWT(1)

ACC NR: AP6007634   SOURCE CODE: UR/0141/66/009/001/0085/0094

AUTHOR: Bykov, V. P.

ORG: none

TITLE: Focusing beams between smooth mirrors

SOURCE: IVUZ. Radiofizika, v. 9, no. 1, 1966, 85-94

TOPIC TAGS: open resonator, beam focusing

ABSTRACT: This a continuation of an author's earlier work (Elektronika bol'shikh moshchnostey, no. 4, 1965) on open resonators. It is proven that an open resonator formed by two spherical mirrors of different curvatures may be either focusing or defocusing. By a mirror ellipsoid approximation, conditions are determined when only one mode corresponds to each longitudinal "quantum number" (single-mode conditions for transverse oscillations). Resonators with astigmatic mirrors cannot be approximated by confocal ellipsoids; these resonators are investigated by the method of finite differences, in a paraxial approximation; two cases are considered. "The author wishes to thank L. A. Vaynshteyn for numerous discussions." Orig. art. has: 3 figures and 35 formulas.

SUB CODE: 20, 09 / SUBM DATE: 07Jul65 / ORIG REF: 004 / OTH REF: 002

UDC: 621.378.325

Card 1/1

L 29209-66

ACC NR: AP6008285   SOURCE CODE: UR/0109/66/011/003/0477/0487

AUTHOR: Bykov, V. P.   30

ORG: none   29

                                                        t

TITLE: Beam theory of open resonators and open waveguides whose oscillations are confined by caustic surfaces

SOURCE: Radiotekhnika i elektronika, v. 11, no. 3, 1966, 477-487

TOPIC TAGS: resonator, waveguide

ABSTRACT: The beam theory is based on the geometrical optics of 3-dimensional oscillations in open resonators set forth in earlier author's publications (Dokl. AN SSSR, 1965, v. 162, no. 1, 46; Large-Power Electronics, no. 4, "Nauka," 1965) and on the concept of "equivalent mirrors." Calculation of shaped-mirror resonators and open transmission lines is reduced to a problem of mirror

Card 1/2   UDC: 621.372.834.09

L 29209-66
ACC NR: AP6008285

/

ellipsoid. Two approximations are assumed: (1) The wavelength is small as
compared to the dimensions of the structure involved; (2) The rays form a
paraxial beam (which makes the equivalent-mirror method applicable). These
assumptions are satisfied in many practical important cases. An equivalent-to-
spherical mirror with slanted incident rays is considered. Quantum conditions
which determine the frequency spectrum and field distribution of various modes
are developed for an open resonator consisting of n mirrors placed at the vertices
of a regular n-angle figure (triangle, quadrangle). The equivalent-mirror method
is applied to lens-type and mirror-type open transmission lines. "The possibility
of wide use of the equivalent-mirror concept was suggested by L. A. Vaynshteyn
to whom the author is deeply grateful." Orig. art. has: 8 figures and
43 formulas.

SUB CODE: 09 / SUBM DATE: 03Dec64 / ORIG REF: 002 / OTH REF: 001

Card 2/2   ll C

BYKOV, V.S. (Leningrad, D-23, Liteynyy prospekt 26, kv.153)

Some diagnostic errors leading to unnecessary gastrectomy. Vest.
khir. no.7:127-131 Jl '64.   (MIRA 18:4)

1. Iz fakul'tetskoy .hirurgicheskoy kliniki imeni Fedorova (nachal'nik -
prof. V.M.Sitenko) Voyenno-meditsinskoy ordena Lenina akademii imeni
Kirova.

—Heat of mixing of liquids. V. Heat of mixing of benzene with dichloroethane, benzene with carbon tetrachloride and hexane with heptane. V. A. Kireev, V. T. Bykov and V. V. Khodorchenko. J. Phys. Chem. (U. S. S. R.) 10, 807–12(1937); cf. C. A. 32, 418¹. The heats of mixing referred to 1 mol. of the mixt. are max. at 0.7 mol. $(CH_2Cl)_2$, 0.5 mol. CCl_4 and 0.5 mol. C_6H_{14}. They are small and pos. for the last system but neg. for the others.   B. C. P. A.

PROCESSES AND PROPERTIES INDEX

Physicochemical methods of analyzing aqueous solutions of organic substances. V. T. Belov, Bull. Far East. Branch Acad. Sci. U. S. S. R. No. 29, 87-92 (1938).—In the system H_2O-$EtOH$-Et_2O by the interferometer method for measuring variations of the refractive index and by the stalagmometric method for estg. surface tension, B. detd. the compn. with an accuracy of 0.05%.

J. S. Joffe.

METALLURGICAL LITERATURE CLASSIFICATION

Bleaching earths of the Far Eastern region. V. I. Bykov and V. I. Alekseeva. *Bull. Far East. Branch Acad. Sci.* (U. S. S. R.) 33, 107-8(1939); *Khim. Referat. Zhur.* 1939, No. 11, 103.—Optimum results with respect to cracked gasoline and pressure distillate were obtained from a specimen of the Ust'niltun tufa; its bleaching ability for pressure distillate corresponded to 62.7% of the decolorizing action. In the contact refining of the pressure distillate it is recommended to take 6-10% of the substance on the wt. of the petroleum product. The degree of grinding and preliminary treatment (heating to 300°) of tufs had no important effect. W. R. Henn

BYKOV, V. T.

Cand. Chemical Sci.

"Experience of Application of Oxyliquids for Superficial and Underground Work,"
Kislorod, No. 4, 1946.

BYKOV, V. T.

USSR/Chemistry - Adsorbents   1 Aug 51

"Structural Types of Natural Adsorbents," V. T.
Bykov, Lab of Sorption Processes, Inst of Phys
Chem, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXIX, No 4, pp 621-624

Studies were made of the structural types and
adsorbent properties (by vapor adsorption method)
of various activated carbons, silica gels, alumina
gels, and naturally occurring clays. The properties
of nel'chikin grades S and V, activated gumbrin,

kaolin from Glukhovitsa (Ukrainian SSR), Zikeyev
(Belorussian SSSR) opoka /a kind of diatomaceous
earth/, ash tuff and products of decompn of
vulcanic tuff from the Far East, and montmorillonite
from Southern Sakhalin were investigated.

211T31

211T31

BYKOV, V. T.

PA 19573

USSR/Chemistry - Catalysts
Sorption

Sep/Oct 51

"Sorption and Catalytic Properties of Certain Bleaching Earths," V. T. Bykov, M. I. Kuadzhe, Inst of Phys Chem, Acad Sci USSR, and Lab of Phys Chem, Moscow State U Imeni M. V. Lomonosov

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 5, pp 487-499

Investigated some phys properties, chem compn, electron-microscopic structure, sorption properties, and catalytic properties (for redistribution of H in gasoline, cracking of cumene, and conversion of PrOH) of a number of different bleaching earths

USSR/Chemistry - Catalysts (Contd)   Sep/Oct 51

including kaolin, montmorillonite and other clays, tuff, synthetic aluminosilicate, etc., from USSR deposits.

195T3

BYKOV, V. T.

PA 197T3

USSR/Chemistry - Petroleum   Nov/Dec 51

"Adsorptive and Bleaching Properties of Natural Adsorbents," V. T. Bykov, Lab of Sorption Processes, Inst Phys Chem, Acad Sci USSR

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 6, pp 678-685

By investigating adsorption of benzene vapor on a number of naturally occurring clays and other adsorbents, established correlation between their phys structure and bleaching effect. Study of vapor adsorption isotherms permitted introduction of the new concept of effective sorption vol, a factor the magnitude of which determines the bleaching

197T3

USSR/Chemistry - Petroleum (Contd)   Nov/Dec 51

effect on petroleum oils on the basis of a straight-line relationship. Best bleaching effect is exhibited by adsorbents with $O(S,S/S$ approx equal B$ (where B is the sp surface of the skeleton and S' of the adsorbing film), i.e., the bleaching effect is detd by the surface of the intermediate pores.

197T3

BYKOV, V. T.

BYKOV, V. T. -- "Soruption Properties and the Structure of Natural
    Sorbents." Sub 15 May 52, Inst of Physical Chemistry, Acad Sci USSR
    (Dissertation for the Degree of Doctorate in Chemical Sciences).

SO: Vechernaya Moskva January-December 1952

BYKOV, V. T.

4

CATALYST

① *Chem*

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

Natural sorbents of the Far East. II. Sorption of benzene vapors by natural sorbents, and structure of the sorbents. V. T. Bykov. *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1952, 553-8(Engl. translation).—See *C.A.* 47, 940h.   H. L. H.

9-2-54

BYKOV, V. T.

USSR/Chemistry - Adsorbents   May/Jun 52

"Natural Adsorbents of the Far East. Part I.
Electron-Microscopic Investigation of Natural
Adsorbents," V. T. Bykov, V. M. Luk'yanovich,
L. V. Radushkevich, Inst of Phys Chem, Acad Sci
USSR

"Iz Ak Nauk, Otdel Khim Nauk" No 3, pp 405-409

Ash tuffs and their weathering products, decompd
tuff agglomerates of old quaternary volcanoes,
bentonite clays, and diatomites were investigated
under the electron microscope and their adsorption
qualities were detd. The samples used in the test

are identified only by the general classifi-
cation given above and by numbers; their exact
place of origin is not indicated.

BYKOV, V. T.

USSR/Chemistry - Benzene; Adsorb-   Jul/Aug 52
ents

"Naturally Occurring Adsorbents of the Far East.
II. Adsorption of Benzene Vapor by Natural Sor-
bents and the Structure of These Sorbents," V.
T. Bykov, Lab of Sorption Processes Inst of
Phys Chem, Acad Sci USSR

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 4,
pp 583-591

For a number of yrs, naturally occurring Far-
Eastern bleaching earths were studied from the

229T11

standpoint of their application in the petroleum
industry, coal-tar industry, recovery of used pe-
troleum oils, and refining ("Vest Del'nevost Fil,
Ak Nauk SSSR," 1939; "Trudy Del'nevost Bazy, Ak
Nauk SSSR, Ser Khim," 1947). Bykov determines
isotherms of sorption and desorption of benzene
vapor by Far-Eastern adsorbents, compares with
corresponding data on natural adsorbents from
European USSR, and finds some of the products tested
highly effective. Author states they resemble
gumbrin, various grades of nal'chikin, and Zi-
keyevo earths.

229T11

Bykov, V.T.

The structure of natural sorbents. V. T. Bykov. Metody Issledovaniya Struktury Vysokodispersnykh i Poristykh Tel, Akad. Nauk S.S.S.R., Trudy Soveshchaniya 1951, 133-44(1953); cf. C A. 47, 9404.—Structure was studied by adsorption of benzene or CCl_4 vapor. The adsorbed vol. in cc./g. and the sp. surface in sq. m./g. are tabulated for 20 prepns. of earth, diatomaceous substances, eruptive material (andesite-basalt, tuffs), kaolin, and montmorillonite. Adsorption properties of bleaching earths are higher than those of carbon black, and alumina gels, and comparable to those of silica gel. The sp. surface s was detd. by the B.E.T. method and the surface of the adsorbed film s' by the method of Kiselev (C.A. 43, 460h). $s/s' = 0.6-1.0$. Weathering of tuffs increases s. The best adsorption properties occur in materials where $s'/s = 1.0$, i.e. materials with transition-type pores leading both to adsorption and capillary condensation. The bleaching factor is $F = 1 + 7 V_{eff}$, where V_{eff} is the effective sorption vol. in 1 g. The chem. compn. of tuffs is an important indication of their value as adsorbents.   S. Pakswer

BOOM, Ye.A.,red.; BYKOV, L.T., red.; GIRNIK, D.V., red.; STOTSENKO, A.V., red.; ONISIMOVA, Z.G., red.; TSVID, A.A., red.; YAROSHENKO, P.D., red.; KALASHNIKOV, L., tekhred.

[Science in the Far East; on the 40th anniversary of the great October socialist revolution and the 35th anniversary of the Soviet regime in the Far East] Nauka na Dal'nem Vostoke; k 40-letiiu Velikoi Oktiabr'skoi sotsialisticheskoi revoliutsii i 35-letiiu sovetskoi vlasti na Dal'nem Vostoke. Vladivostok, 1957. 111 p.   (MIRA 12:2)

1. Akademiya nauk SSSR. Dal'nevostochnyy filial, Vladivostok.
              (Soviet Far East--Science)

SUBJECT: BYKOV, V.T.
            USSR/Activities of the Vladivostok Academy   25-5-12/35
            of Sciences

AUTHOR: Bykov, V.T., Chairman of the Presidium of the USSR Academy of
            Sciences in the Far East

TITLE: In the Far East (Na Dal'nem Vostoke)

PERIODICAL: Nauka i Zhizn' - May 1957, No 5, p 27-28 (USSR)

ABSTRACT: This article deals with the activities of the Far Eastern
            branch of the USSR Academy of Sciences. It is located at
            Vladivostok and was founded in 1932. One of the most im-
            portant problems to be solved is to locate deposits of
            mineral products, as lead, tin, zinc, molybdenum, coal, iron
            ore etc. in the coastal areas and along the Amur river. An-
            other question the Academy has to deal with is that of the
            most effective exploitation of the vast hydro-power re-
            sources of the Far East, in the first place the complex
            utilization of the Amur river and its reservoir for producing
            electric power. In this special case Soviet and Chinese
            scientists attempt to approach the problems together as
            common interests are involved. Biologists have been perform-
Card 1/2   ing extensive research work in the field of the Far Eastern

TITLE: In the Far East (Na Dal'nem Vostoke)   25-5-12/35

flora, which resulted in monographs on the vegetation of the coastal area, Sakhalin, and the Kuril islands. Agricultural scientists were able to report larger crops of soybeans and the fact that they were able to adapt the ginseng plant (pa-nax ginseng) for cultivation on a large scale.

The article contains one picture.

ASSOCIATION:

PRESENTED BY:

SUBMITTED:

AVAILABLE:

Card 2/2

USSR / Cultivated Plants. Medicinal Plants. Essential-   M
    Oil Plants. Poisonous Plants.

Abs Jour   : Ref Zhur - Biologiya, No 6, 1959, No. 25104

Author   : Bykov, V. T.; Titlyanov, A. A.
Inst   : Eastern Branch AS USSR
Title   : Concerning the Cultivation of Ginseng in
              the Korean People's Democratic Republic

Orig Pub   : Izv. vost. fil. AN SSSR, 1957, No 10,
              102-112

Abstract   : Cultivation of ginseng in Korea is well
              known for 1300 years. A method of growing
              ginseng in Korea at the present time is
              described in detail. Fundamental require-
              ments consist in that the soil must be light,
              well aerated, adequately - but not excessively
              - humidified, well fertilized; plants must

Card 1/2

USSR / Cultivated Plants. Medicinal Plants. Essential-   M
       Oil Plants. Poisonous Plants.

Abs Jour   : Ref Zhur - Biologiya, No 6, 1959, No. 25104

            grow in dispersed light and must be pro-
            tected from the wind and infective diseases.
            Mostly, ginseng is grown on flat slopes of
            mountains under the protection of straw
            sheds. Korea's climate is compared with the
            climate of the seaside, and differences in
            the methods of ginseng cultivation at the
            seaside and in Korea are noted. Ginseng is
            widely used in Korea. Some data on the
            methods of its use are presented.

Card 2/2

187

Bykov, V. T.

AUTHORS: Bykov, V. T., Popov, M. V.,   3o-1o-24/26

TITLE: On the Road of **Steady Progress**   (Na puti neuklonnogo progressa)

ABSTRACT: Special importance should be attached to the foundation of the
             Korean AS in 1952, thus at a moment when the Korean people fought
             a heroic struggle against the invaders. The authors of this re-
             port were in a position to follow the activity of the Korean AS
             throughout a longer period. Their impressions are as follows:
             Formerly there was neither a university, nor a research institute
             in Northern Korea. Today there are one university, 16 pedagogical
             institutes, and 8o technical colleges. The AS which is at the
             head of all these institutions, is charged to direct the scienti-
             fic studies in such a way as to enable them to supply as many
             practical results for the national economy as possible. The AS
             has at present 1o regular members and 15 corresponding members.
             Research institutes of the following branches belong to the AS:
                 physico -mathematical, chemical, technical sciences, medicine
             and pharmacology, history, economy and justice, archeology and
Card 1/2   ethnography, linguistics and literature. Moreover, there is a

On the Road of **Steady Progress**   (From the AN of the Corea   3o-1o-24/26

biological laboratory, a scientific central library, a publishing enterprise and a combinat for the manufacture of instruments attached. The results of the research works was quite important and the following amongst them are worth-mentioning in particular: Manufacture of synthetic fibre on the basis of acetylene which is obtained from domestic minerals, as well as the construction of a particularly reliable machine for planting rice. In the historical field the composition of a "Korean History" should be mentioned especially. Besides, a number of periodicals is issued which contain not only treatises, but to a large extent also foreign reports, particularly from the USSR and China. Since the libraries were almost completely destroyed during the war, great attention is paid at present to procure the necessary scientific literature and the funds required are made available.

ASSOCIATION: Academy of Sciences of the Korean People's Democratic Republic

AVAILABLE: Library of Congress

Card 2/2

BYKOV, V.T.; GERASIMOVA, V.G.; ZALEVSKIY, N.I.

Studying the porosity of natural sorbents using capillary
condensation and impression of mercury. Izv. AN SSSR Otd.
khim. nauk no.10:1250-1252 O '57.   (MIRA 11:3)

1. Laboratoriya adsorbtsionno-strukturnogo i khromatograficheskogo
analiza Dal'nevostochnogo filiala AN SSSR i Kafedra khimii Dal'-
nevostochnogo politekhnicheskego instituta im. Kuybysheva.
                    (Sorbents) (Porosity)

Bykov, V. T.

AUTHORS: Naydenova, I. N., Andreyeva, V. A., Bykov, V. T.,   62-11-22/29
                Versen, S. P., Zyakhor, Ye. S., Cherniy, V. F.

TITLE: On the Investigation of Effective Substances of the Cinquefoil
                Ginseng (K izucheniyu deystvuyushchikh veshchestv zhen'shenya)

PERIODICAL: Izvestiya AN SSSR, Otdel.Khim.Nauk, 1957, Nr 11, pp.1403-1404
                (USSR)

ABSTRACT: In order to confirm the assumed compounds in the cinquefoil gin-
                seng (Panax quinquefolium), colour reactions were applied. Name-
                ly such ones which are applied in the paper chromatography. The
                ginseng extracts provide coloured drop-reactions with "hinhydrine"
                antimony trichloride, paradimethylaminobenzaldehyde, benzidine,
                α-naphthol. These reactions confirm the existence of sugar,
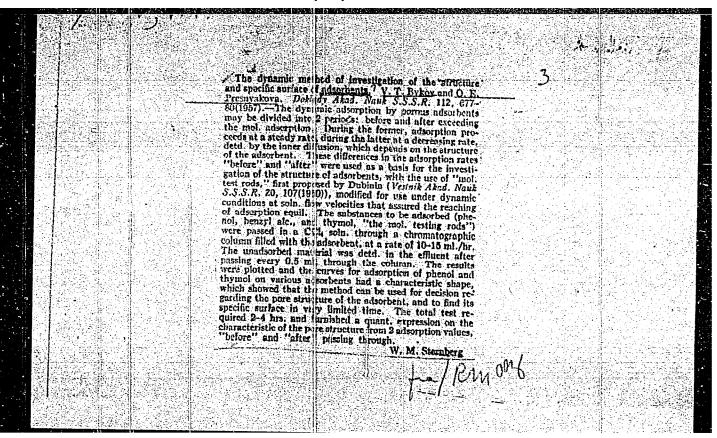   amino- and steroid-compounds. The application of the chromato-
                graphy made it possible to carry out the elimination of active
                preparations from the ginseng extract. The root itself is cal-
                led "San'-sa". There are 10 references, 9 of which are Slavic.

ASSOCIATION: Far-east Branch of the AN USSR (Dal'nevostochnyy filial AN SSSR)
SUBMITTED: June 24, 1957
AVAILABLE: Library of Congress
Card 1/1

3

The dynamic method of investigation of the structure and specific surface of adsorbents. V. T. Bykov and O. E. Presnyakova. *Doklady Akad. Nauk S.S.S.R.* 112, 677-80(1957).—The dynamic adsorption by porous adsorbents may be divided into 2 periods: before and after exceeding the mol. adsorption. During the former, adsorption proceeds at a steady rate, during the latter at a decreasing rate, detd. by the inner diffusion, which depends on the structure of the adsorbent. These differences in the adsorption rates "before" and "after" were used as a basis for the investigation of the structure of adsorbents, with the use of "mol. test rods," first proposed by Dubinin (*Vestnik Akad. Nauk S.S.S.R.* 20, 107(1950)), modified for use under dynamic conditions at soln. flow velocities that assured the reaching of adsorption equil. The substances to be adsorbed (phenol, benzyl alc., and thymol, "the mol. testing rods") were passed in a CCl₄ soln. through a chromatographic column filled with the adsorbent, at a rate of 10-15 ml./hr. The unadsorbed material was detd. in the effluent after passing every 0.5 ml. through the column. The results were plotted and the curves for adsorption of phenol and thymol on various adsorbents had a characteristic shape, which showed that the method can be used for decision regarding the pore structure of the adsorbent, and to find its specific surface in very limited time. The total test required 2-4 hrs. and furnished a quant. expression on the characteristic of the pore structure from 2 adsorption values, "before" and "after" passing through.

W. M. Sternberg

BYKOV, V.T., prof., doktor khim.nauk, otv.red.; BOOM, Ye.A., kand.tekhn. nauk, red.; KIRGINTSEV, A.N., kand.khim.nauk, red.; MIKHAYLOV, M.A., kand.khim.nauk, red.; OZHIGOV, Ye.P., kand.khim.nauk, red.; BUDILOVSKAYA, S.K., tekhred.

[Results of investigational work on the chemical raw materials of the Far East] Materialy po issledovaniiu khimicheskogo syr'ia Dal'nego Vostoka. Vladivostok Akad.nauk SSSR. Sibirskoe otd-nie. Dal'nevostochnyi filial im. V.L.Komarova, 1958. 85 p.

(MIRA 13:11)

1. Vsesoyuznoye khimicheskoye obshchestvo imeni D.I.Mendeleyeva. Primorskoye otdeleniye.

(Siberia, East--Mines and mineral resources)

Bykov, V. T.

PHASE I BOOK EXPLOITATION   1021

Akademiya nauk SSSR. Dal'nevostochnyy filial

Prirodnyye sorbenty Dal'nego Vostoka (Natural Sorbents of the Far
East) Moscow, Izd-vo AN SSSR, 1958. 127 p. (Series: <u>Its</u>: Trudy,
seriya khimicheskaya, vyp. 3) 1,600 copies printed.

Resp. Ed.: Bykov, V.T., Professor; Ed. of Publishing House:
Bankvitser, A.L.; Tech. Ed.: Prusakova, T.A.

PURPOSE: The present collection of articles is addressed to engineer-
ing and technical personnel of industrial, planning and managing
bodies in Soviet industries, and members of scientific and educa-
tional institutions dealing with the problems of bleaching processes.

COVERAGE: The rapidly expanding industries of the Soviet Far East are
continuously increasing their demands for various types of sorbents
for processing and refining mineral and vegetable oils, animal fats,
etc. The present collection of 13 articles describes the various
types of natural sorbents extracted in the Soviet Far East, their

Card 1/4

Natural Sorbents of the Far East   1021

physical-chemical and adsorptive properties, the history of their
industrial exploitation, the geological formations in which they
are found, the theory of their bleaching and refining action, the
effect of weathering on their structure, and their uses in industry.
The studies conducted by the authors indicate the presence of large
quantities of high-quality natural sorbents in the Soviet Far East
sufficient to satisfy local demands, thus eliminating the necessity
of their import from other parts of the USSR.

TABLE OF CONTENTS:

Card 2/4

Card 3/4

Natural Sorbents of the Far East   1021

AVAILABLE: Library of Congress

MM/whl
1-5-59

Card 4/4

BYKOV, U. T.

BYKOV, V.T.

Far Eastern Branch of the Academy of Sciences of the U.S.S.R. is at a new stage in its development. Soob.DVFAN SSSR no.9:3-12 '58.
(MIRA 12:4)
(Academy of Sciences of the U.S.S.R.)

BYKOV, V.T.; GERASIMOVA, V.G.

Sorption of heptane by heat-treated natural sorbents of the Far East.
Soob.DVFAN SSSR no.10:3-9 '59.   (MIRA 13:11)

1. Dal'nevostochnyy filial imeni V.L.Komarova Sibirskogo otdeleniya
AN SSSR.

(Heptane)   (Sorbents)

BYKOV, V.T.; SAKHNO, V.G.; USTINOVSKIY, Yu.B.

Outline of beds of natural sorbents in Amur Province.
Trudy DFAN SSSR. Ser. khim. no.4:5-12 '60.   (MIRA 14:10)
(Amur Province—Sorbents)

GORLOVA, L.V.; LIZGOV, V.S.

Physicochemical and **adsorptive properties of natural sorbents**
of the Far East. Part 2. Trudy DVIN SSSR. Ser. khim.
no.4:13-16 '60.   (MIRA 14:10)
          (Soviet Far East—Sorbents)

DENOV, V.T.; GORBUNOVA, V.G.; ZALEVSKIY, N.I.

Investigation of the porosity of natural sorbents by methods involving capillary condensation and impregnation of mercury under pressure. Trudy DFAN SSSR. Ser. khim. no.4:17-23 '60
(MIRA 14:10)

(Sorbents)
(Porosity)

ZALEVSKIY, N.I.; BYKOV, V.T.

Types of porous structures of natural sorbents. Trudy DFAN
SSSR. Ser. khim. no.4:24-33 '60.   (MIRA 14:10)
                    (Sorbents)
                    (Porous materials)

BYKOV, V. T.

Classification and rating of natural mineral sorbents. Trudy
DFAN SSSR. Ser. khim. no.4:34-40 '60.
(Sorbents)   (MIRA 14:10)

GERASIMOVA, V.G.; BYKOV, V.T.

Adsorption of benzene vapor by natural sorbents of the Far East. Trudy DFAN SSSR. Ser. khim. no.4:41-48 '60.

(MIRA 14:10)

(Far East—Sorbents)
(Benzene)

BYKOV, V.T.; GERASIMOV, V.G.; GOR'KOVSKAYA, V.T.

Dynamic action of natural sorbents in the sorption of benzene vapors. Trudy DFAN SSSR. Ser. khim. no.4:49-54 '60.

(MIRA 14:10)

(Sorbents)
(Benzene)

BYKOV, V.T.; SHIRKOVA, L.V.

Adsorption of water and alcohol vapors by adsorbents of differing structure. Trudy DVF. SSSR. Ser. khim. no.4:55-67 '60.
(MIRA 14:10)

(Adsorption)

DYKOV, I.T.; YAKOVLEVA, I.V.

Investigation of the adsorption of dissolved substances by
natural sorbents. Trudy DFAN SSSR. Ser. khim. no.4:68-
76 '60.
(MIRA 14:10)

(Adsorption)

BIKOV, V.T.; SIMONOVA, L.V.

Adsorption of alcohols from carbon tetrachloride solutions
by natural sorbents. Trudy DFAN SSSR. Ser. khim. no.4:77-
82 '60.   (MIRA 14:10)
                    (Alcohols)
                    (Adsorption)
                    (Carbon tetrachloride)

BYKOV, V. T.; MATYUKHINA, V. K.

Effect of temperature and chemical factors on structural changes
in natural sorbents. Trudy DFAN SSSR, Ser. khim. no.4:88-96 '60.
(MIRA 14:10)
(Sorbents)

BYKOV, V. T.; ZALEVSKIY, N. I.

Structural changes in natural sorbents in the process of
weathering. Trudy DFAN SSSR. Ser. khim. no.4:97-100 '60.
(MIRA 14:10)

(Sorbents)
(Weathering)

BYKOV, V. T.; ZALEVSKIY, N. I.

Comparing the porous structure and bleaching ability of natural sorbents. Trudy DFAN SSSR. Ser. khim. no.4:109-112 '60.
(MIRA 14:10)

(Sorbents)
(Bleaching agents)

BYKOV, V.T.; LIPKIND, B.A.; GERASIMOVA, V.G.

Evaluation of the bleaching and catalytic properties of some natural sorbents. Trudy DVAN SSSR. Ser. Khim. no.4:113-115 '60.   (MIRA 14:10)
            (Sorbents)
            (Bleaching agents)
            (Catalysts)